G. M. BAIRD.

AUTOMATIC GRAIN WEIGHER.

APPLICATION FILED OCT. 9, 1905.

898,420.

Patented Sept. 15, 1908.

3 SHEETS—SHEET 1.

Fig. 1.

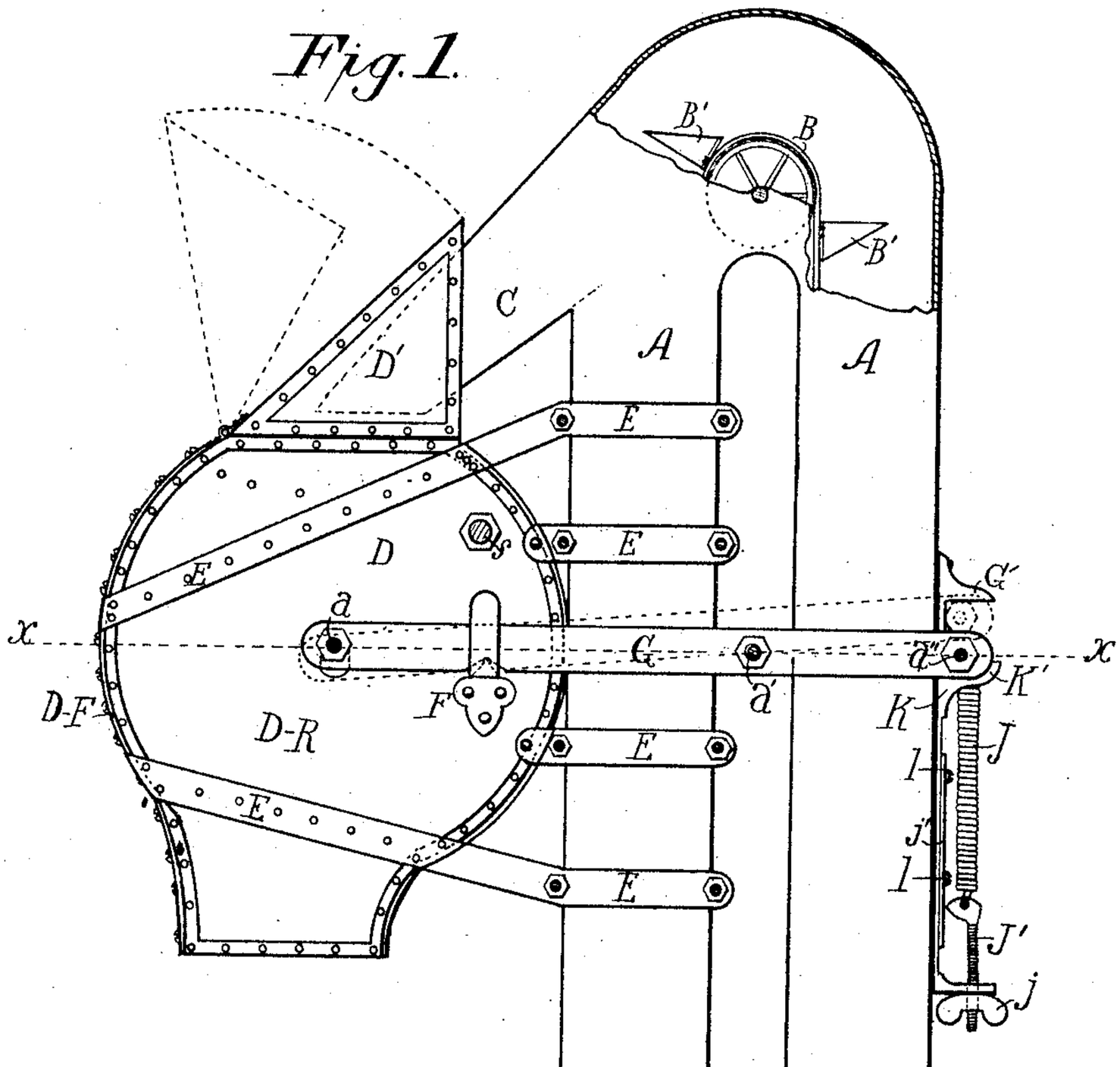

Fig. 2.

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Witnesses

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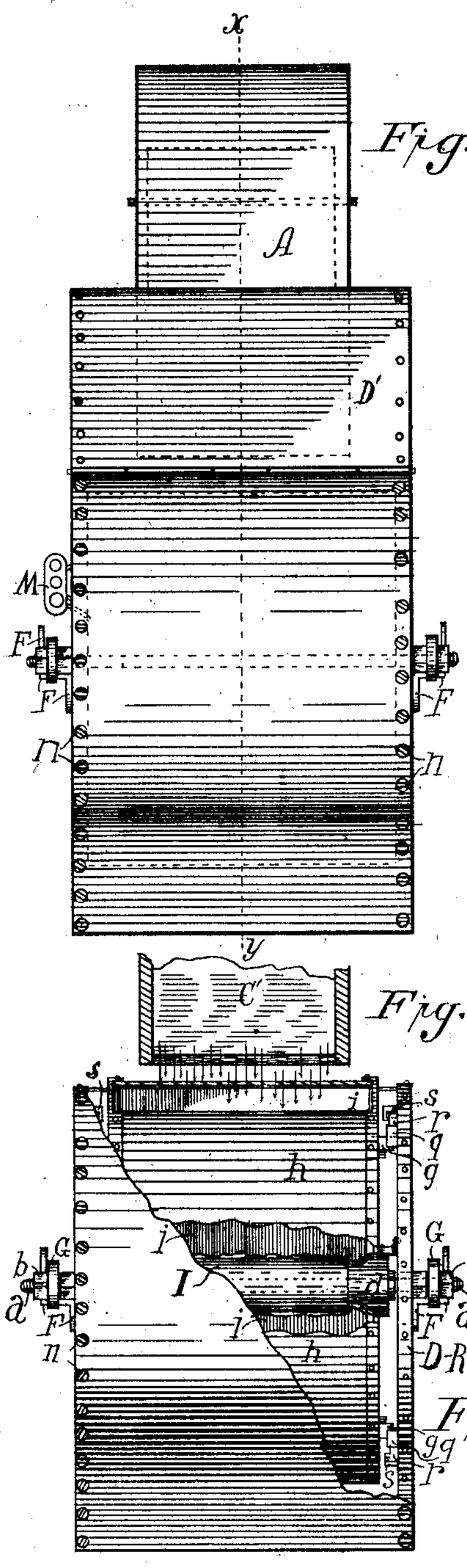

Fig. 3.

Fig. 5.

Fig. 6.

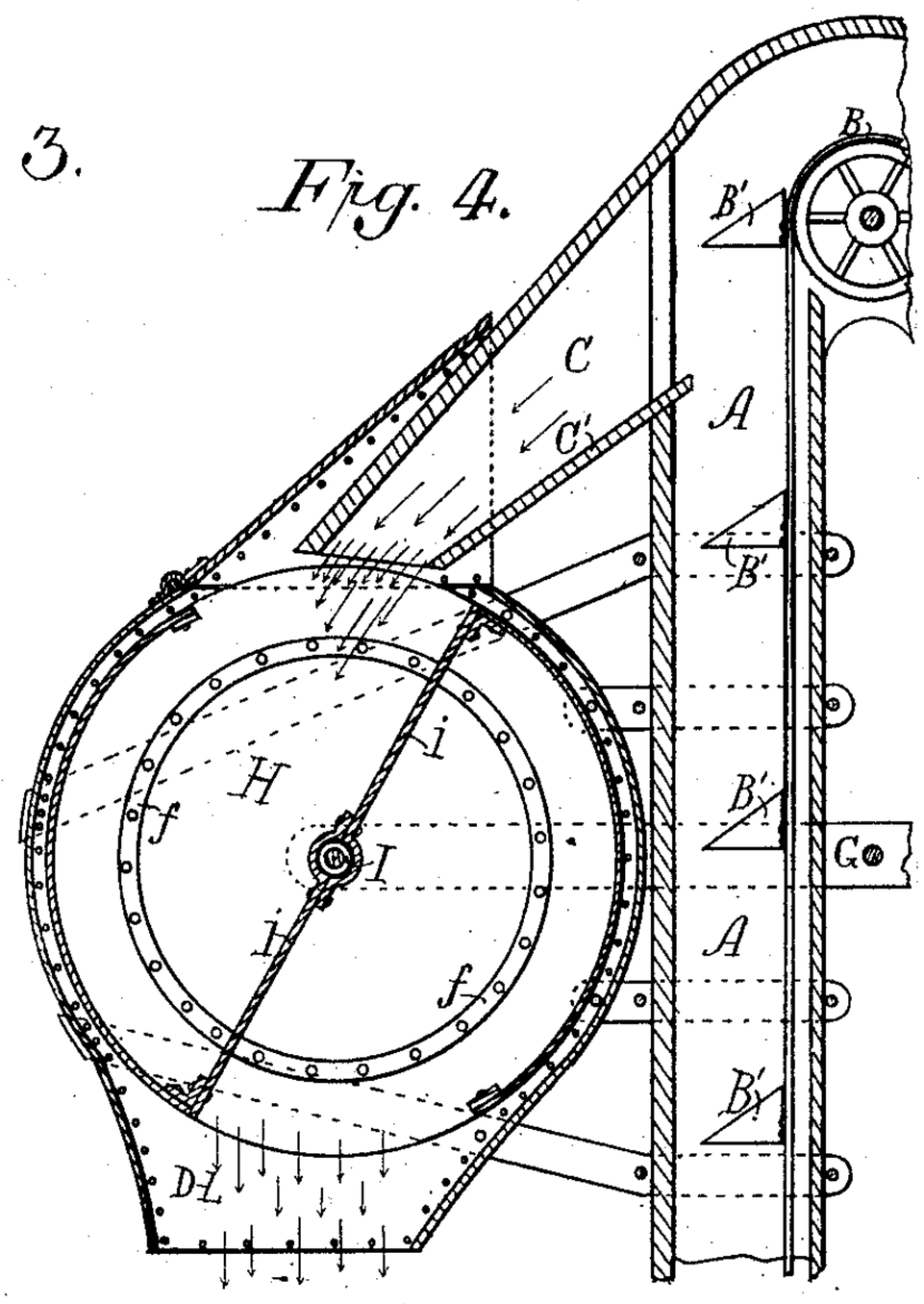

Fig. 4.

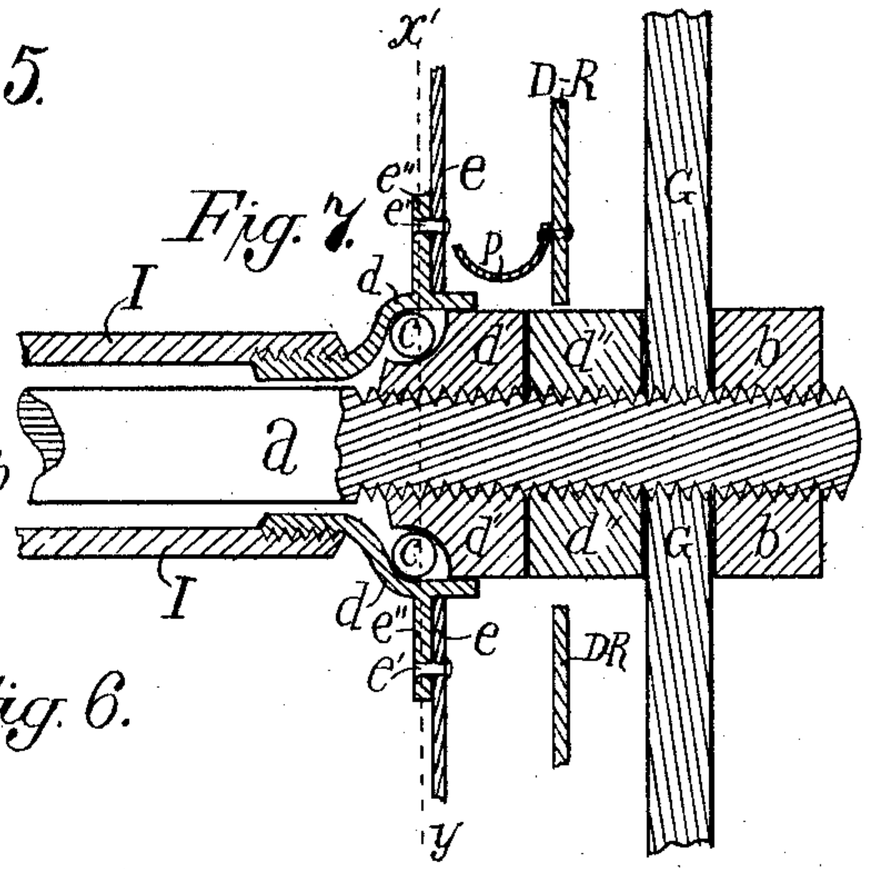

Fig. 7.

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3 SHEETS—SHEET 3.

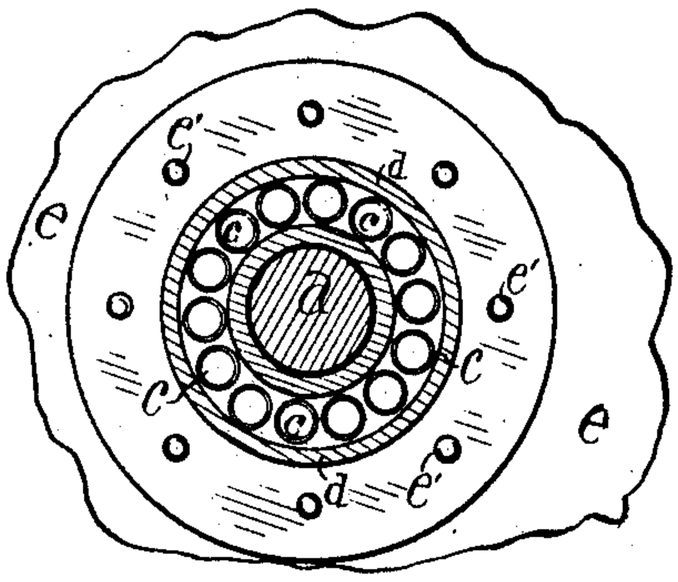


Fig. 8.

Fig. 9.

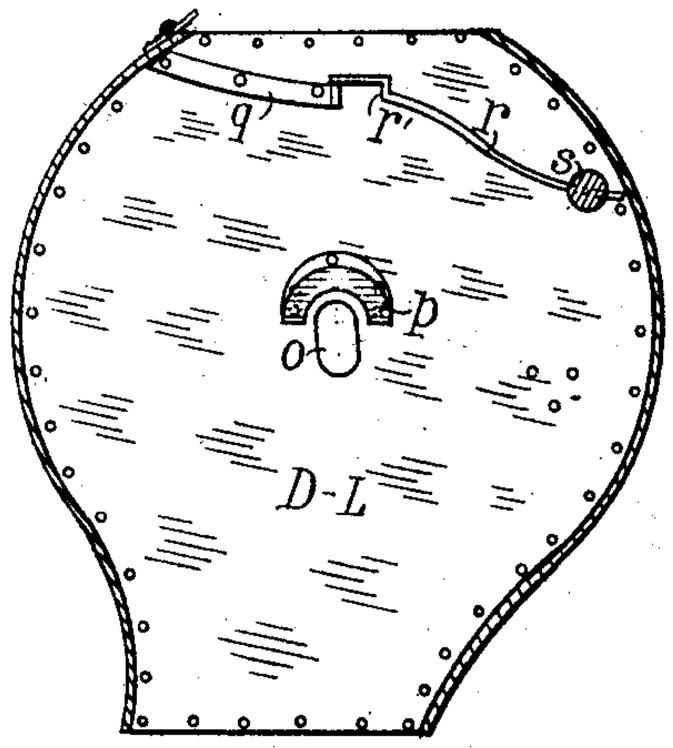


Fig. 10.

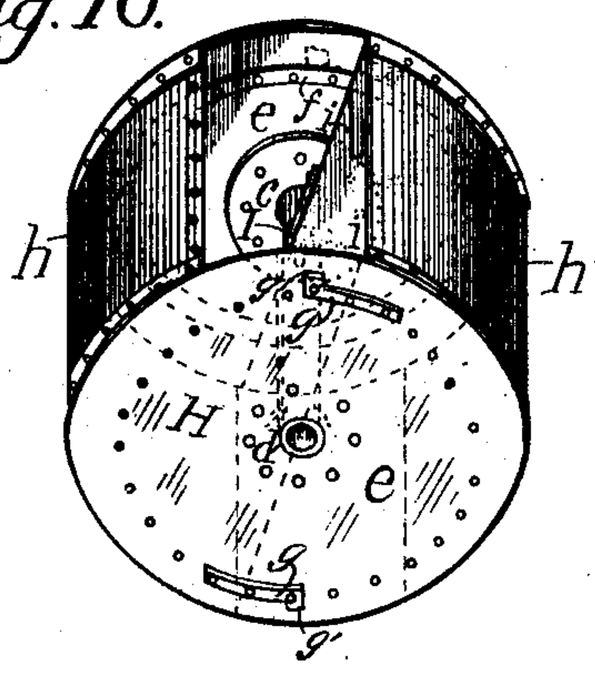


Fig. 11.

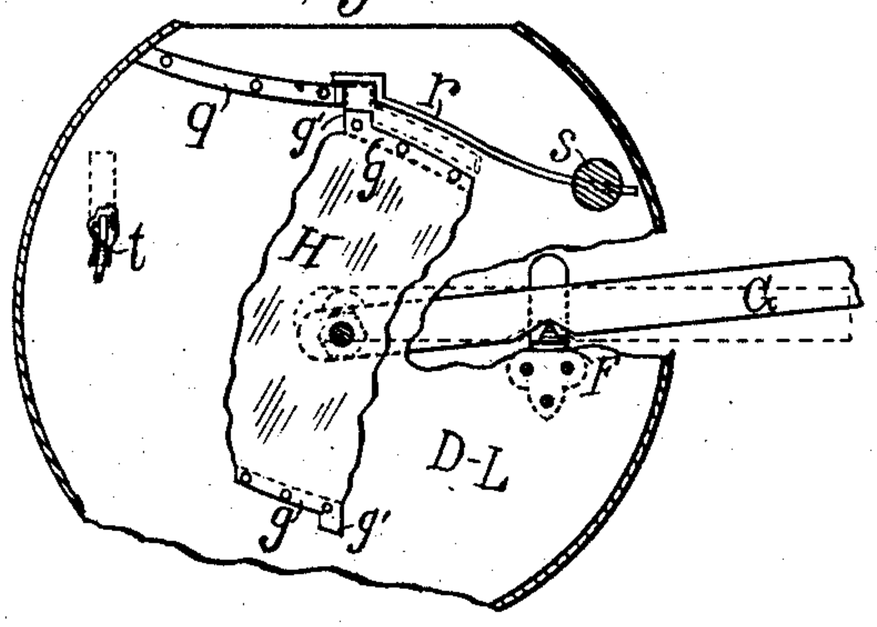


Fig. 12.

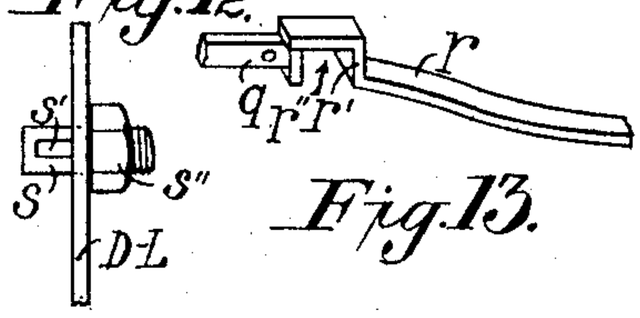


Fig. 13.

Fig. 14.

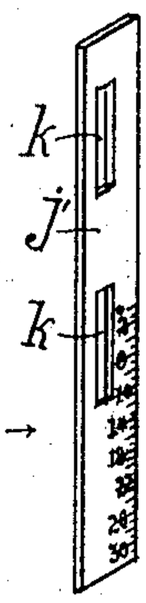


Fig. 15.

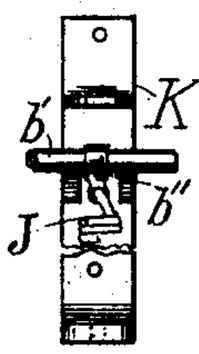
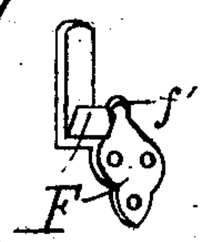


Fig. 16.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE M. BAIRD, OF OKLAHOMA, OKLAHOMA.

AUTOMATIC GRAIN-WEIGHER.

No. 898,420. Specification of Letters Patent. Patented Sept. 15, 1908.

Application filed October 9, 1905. Serial No. 281,955.

To all whom it may concern:

Be it known that I, GEORGE M. BAIRD, a citizen of the United States, residing at Oklahoma city, in the county of Oklahoma, Oklahoma, have invented certain new and useful Improvements in Automatic Grain-Weighers, of which the following is a specification.

My invention relates to improvements in automatic grain weighers in which the grain receptacle is a rotatory drum having a central partition and duplicate openings on opposite sides of the drum for ingress and egress of the grain, the said receptacle is housed by a casement and mounted on a shaft secured in the ends of duplicate lever-bars having attached to their opposite ends a tension spiral spring, secured to an adjustable index-bolt operating in conjunction with an index-scale, all of which will, hereinafter be more fully explained.

The objects of my invention are; first, to provide a reliable, accurate automatic grain weigher; second, one which will operate in weighing all kinds of grain in all conditions, dry or wet; third, one adapted to be attached to and operated in conjunction with any threshing machine and other similar machines or elevators. I attain these objects by the mechanism illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a right side elevation of the weigher attached to a section of the elevator; Fig. 2 is a plan view of Fig. 1 on the line *x x;* Fig. 3 is a front elevation of Fig. 1; Fig. 4 is a right side elevation of Fig. 3, on the line *x y;* Fig. 5 is a plan section of the elevator spout; Fig. 6 is a front elevation having portions broken away disclosing interior parts; Fig. 7 is a cross section of the shaft and connecting portions on the line *x x* of Fig. 1; Fig. 8 is a sectional elevation of Fig. 7, on the line *x' y;* Fig. 9 is an elevation of the left side of the housing or casement of the receptacle exposing the interior surface to which is secured the stop and the pawl-spring; Fig. 10 is a perspective view of the grain receptacle; Fig. 11 is a right elevation of the left side of the casement and a section of the left side of the grain receptacle, showing the relative position of the parts when the grain receptacle trips and when it is filling; Fig. 12 is an elevation of the tension-bolt of the pawl-spring; Fig. 13 is a perspective view of the pawl-spring and section of stop; Fig. 14 is a perspective view of the index scale-plate; Fig. 15 is a perspective view of the left lever-bar fulcrum or pivot, the right one being a duplicate. Fig. 16 is a sectional elevation of the scale-plate-frame viewed from the rear.

Similar letters refer to similar parts in the several views.

Referring to the drawings, A A are the elevator flues, B is the elevator belt and B' indicates the cups secured thereto; C is the elevator spout, D is the casement rigidly secured to one of the elevator flues by the clamp-straps E E E E, and to the outer surface of the casement sides is secured the pivots F; upon which the lever-bars G rest and vibrate, the said bars being held in position by shaft *a* and stay rods *a'* and *a''*, the latter two being encompassed by sections of gas pipe *b'* to afford additional firmness. The clasp *b''* secured to the rear stay rod *a''* is attached to the upper end of spring J its lower end being attached to the indicator-bolt J' which passes through the foot projection of the scale-plate-frame K and is provided with a thumb-nut *j*, to regulate the tension of the spring J. The scale-plate-frame projections K' and G' limit the vertical movement of the rear incased stay-rod *a''*. The said scale-plate-frame is secured to the rear elevator flue A; the scale-plate *j'* is provided with adjusting slots *k k* and secured by screws *l l* to the scale-plate-frame K. Shaft *a*, constitutes the support of the rotatory grain-receiver H, having a hollow shaft I, adapted to rotate upon ball bearings, *c c* being the balls, and *d d* being the flanged female cones in the ends of the hollow shaft I resting and rotating upon the said balls, they being held in place by the male cones *d' d'*, the slack and wear being obviated by the male cones aided by the jam-nuts *d'' d''*. The flanges *e''* of the female cones *d*, are firmly secured to the end walls *e e* of the rotatory grain-receptacle H by the rivets *e';* the said walls being thin and to afford additional firmness they are reinforced by the ring-plates *f*, riveted to the inner surface thereof, and to the outer surfaces are secured the latch bars *g*, two of which are shown the other two occupying the same relative position on the opposite end of the receptacle; to the periphery of said walls *e e*, is secured the two equal sections *h h*, of sheet iron or other suitable casement, leaving two equal openings on opposite sides for the ingress and

egress of the grain. The partition *i*, divides the grain-receptacle into two equal semi-circular compartments, each of which holds by measure one-half of a bushel of grain of any kind, its weight being indicated on the scale-plate *j'*, by the indicator bolt J'.

The hood D' is hinged to the upper edge of the front section of the casement and may be turned back as indicated by the dotted lines, and serves the three-fold purposes of preventing the elevated grain from escaping, the outside trash from entering into the grain-receptacle, or wind affecting the accuracy of the weigher.

The front section of the casement is secured in place by the stove-bolts *n*, (see Figs. 2, 3 and 6,) and it can be removed as occasion may require.

It will be observed that the front portion of the casement is so shaped that it permits the free discharge of the grain-receptacle H.

The oblong opening *o*, in each side wall of the casement permits sufficient depression of the receptacle H, to trip and dump its contents into the conveyer (not shown). Directly above the said holes *o*, *o*, are the compound-curved shields *p*, *p*, riveted to the inner surface of the side walls of the casement to prevent the escape of stray kernels of grain, and directly above said shields is the rear end of the longitudinal plate-bar stops *q*, having their rear ends reinforced, or bent at a right-angle, and being riveted to the side walls, D—R and D—L, as shown in Figs. 9 and 11, in which is also shown one of the duplicate pawl-springs *r*, having a longitudinal, flat compound-curved stem adapted to enter the slot *s'* in the tension-bolt *s*, which passes through the side walls of the casement and is secured at the proper degree of tension by the nuts *s''* (see Figs. 12 and 13). The front end of said springs *r*, having offsets thereby forming shoulders *r'* and recesses *r''* between said shoulders and the rear ends of the stops *q*, upon which the front ends of the pawl-springs rest, they perform the two-fold office of checking the too rapid rotation of the grain-receptacle H, and to prevent reaction when the heads *g'*, of the latch-bars *g*, engage the stops *q*.

The grain-receptacle H, is divided into two equal compartments by the partition *i*, composed of duplicate parts having one edge thereof firmly secured to the forward edges of the said sections of casement *h*, which have their rear edges reinforced. The said partition *i*, encompasses the hollow shaft I, as shown in Fig. 4.

By reference to Figs. 1, 11 and 15 it will be seen that the bearings of the pivot F, is in shape similar to an inverted **V**, and has at the shoulder thereof a slight enlargement for the purpose of preventing the lever-bars G from contact with the casement D. At the fulcrum point of the lever-bars G, they are cut away like a broad inverted **V**, the object being to afford the least friction possible and have the lever-bars retain their positions.

In connection with this weighing device is the usual grain register M, having a lever *t*, extending downwardly therefrom and through an opening in the casement D—L, in such a position as to be forced outward by the left latch-bars *g g*, at each half-revolution of the grain-receptacle H; the said movement of the lever *t*, causing the register to operate in the usual manner as a counter, which requires a double action for each bushel tallied.

In operation, the elevator cups discharge the grain upon the floor C', of the spout C, by which it is conducted into the upward opening of the grain-receptacle H; having adjusted the indicator-bolt J' by the thumb-nut *j*, to the grain to be weighed, the grain in the compartment being filled depresses the receptacle as it nears the half-bushel weight and at the proper time the heads *g'*, of the latch-bars *g*, disengages the stops *q*, and the receptacle makes a semi-revolution; the duplicate parts assuming the positions of the originals, the first compartment dumping its contents while the opposite one is filling. (See Figs. 1 2 5 and 11.) At the point of greatest depression of the said receptacle the relative positions of the unstable parts are indicated by the respective dotted lines and while the weight of the grain depresses the front ends of the lever-bars G, overcoming the tension of the spring J. The said depression cannot exceed a certain point on account of the casement *b'* of the rod *a''*, coming in contact with the scale-frame projection G'. The weight of the grain causes the grain-receptacle to "trip", and the weight being nearly all upon one side of the axis of the said receptacle, and it being mounted on ball-bearings its action is so instantaneous as to make it unnecessary to stop the flow of the grain while the semi-revolution is being made. Whatever "spill" may occur can be compensated for in the tension of the spring J regulated by the thumb-nut *j*.

While my invention is especially adapted to be used in connection with threshing machines, it is adapted to be used with other machines or elevators, and slight modifications of construction may be made without departing from the spirit of the invention or sacrificing the principles thereof.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent, is—

1. In combination with a grain elevator having a housing-casement secured thereto, the front section of said casement being removable and having hinged to its upper edge a movable hood; the casement side walls D—R and D—L provided with vertically oblong openings centrally located therein,

with concavo-convex shields *p* located immediately above said openings and secured to the said side walls, as shown and described.

2. In an automatic grain weigher having a housing-casement; the grain receptacle H, centrally located within said housing-casement and consisting of two semi-circular compartments, and having two thin circular end walls *e e* reinforced by ring-plates *f*, riveted to their inner surfaces, and having the latch-bars *g* secured to their outer surfaces, the said end walls *e* having secured to their peripheries the two equal and oppositely located sections of casement *h h*, each section having secured to one of its edges the outer edge of the partition *i*, as described.

3. In an automatic grain weigher having a housing casement with vertical side walls; a rotatable grain receptacle H mounted therein; the duplicate, parallel, horizontal lever-bars G G one on each side of said casement and having a fulcrum notch cut in its under edge a perforation in each end and intermediate its ends; the lateral stay-rod *a'* encompassed by a section of tube or pipe the ends of said rod being threaded passed through the said lever-bars and having threaded nuts turned thereon to secure in proper relative position the said lever-bars; the stay-rod *a''* being encompassed by a section of tube or pipe and having its threaded ends pass through the rear ends of said lever-bars and having threaded nuts provided to press the inner surface of said lever-bars firmly against the ends of said tube or pipe to maintain the relative position of the said lever-bars; the non-rotatable shaft *a* passing through said housing-casement and through the front ends of the said lever-bars and having upon its ends nuts and jam-nuts to form a rigid support for the said grain receptacle; the lever-bar supporting pivots F having a body portion firmly secured to the outer surface of the vertical walls of the said housing-casement and having an outward off-set forming an inverted V-shaped fulcrum pivot upon which the said lever-bars rest and vibrate, the said pivots having upwardly extending guards outside their bearings to prevent displacement of the said lever-bars, as described.

4. In an automatic grain weigher, a rotatable grain receptacle H, including its supporting shaft *a* and the duplicate lever-bars supporting said shaft and having an intermediate stay-bar *a'* and a rear stay-bar *a''* securing in position the said duplicate lever-bars which are fulcrumed between their centers and their front ends upon the pivot F; the weight indicating device consisting of and including the spiral spring J having its upper end attached to the said rear stay-bar *a''*; the tension-indicator bolt J' having upon its threaded shaft the tension-thumb-nut *j* its head being attached to the said spiral springs; the scale-plate frame K having the two upper rear projections K' and G and the lower rear perforated projection containing the said tension-indicating bolt; the adjustable scale-plate *j'* secured to the scale-plate frame firmly attached to the rear portion of the elevator tube, substantially as shown and described.

5. In an automatic grain weigher having a housing-casement with vertical side walls; a grain receptacle H mounted therein; the duplicate, parallel lever-bars G G positioned one upon each side of the said housing-casement and having a fulcrum notch in its under edge midway its front end and center and having central and end perforations; the receptacle supporting shaft *a* having its ends rigidly secured in the front end of said lever-bars by the nuts and jam-nuts threaded thereon; the duplicate stay-rods *a'* and *a''* having their ends threaded and passed horizontally through the central and rear end perforations of said lever-bars and having threaded nuts contacting the outer surface of said lever-bars to retain their uniform position; the duplicate sections of tube or pipe encompassing said stay-rods and having their ends engaging the inner surface of the said lever-bars to afford rigidity to the same; the lever-bar supporting pivots F F having inverted V-shaped fulcrum bearings upon which the said lever-bars rest and vibrate, the said pivots being firmly secured upon the outer surfaces of the vertical walls of the said housing-casement and opposite each other, the said pivots having vertical projections outside of the said lever-bars to prevent their lateral displacement; the slotted bolts *s* having their slotted portions extending through the side walls of the said housing-casement to the interior of the casement; the check springs *r* having their rear ends resting in the slots of said bolts provided with threaded nuts upon their threaded portions by means of which the tension of the said springs is regulated, as described and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE M. BAIRD.

Witnesses:
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MACGREGOR DOUGLAS.